REMARKS

Claims 1-9 are pending in the instant application. Claims 1-9 stand rejected under 35 USC 103 as obvious over Ardenkjær-Larsen et al, US6,466,814 in view of Pines, US6,426,058. The application has been amended.

Claims 1 and 9 have been amended to more specifically state what the applicant regards as the invention. Specifically, claims 1 and 9 have been amended to include that the solvent, or mixture of solvents, is a single chain alcohol or a glycol and/or has lipophilic properties. Basis for the amendment is found on page 2, last paragraph of the PCT application. Claim 2 has been cancelled. Applicant respectfully submits that none of the amendments constitute new matter in contravention of 35 U.S.C. §132. Reconsideration is respectfully requested.

Claims 1-9 stand rejected under 35 USC 103 as obvious over Ardenkjær-Larsen et al, US6,466,814 in view of Pines, US6,426,058. This rejection is respectfully traversed.

The present invention is directed to a new and improved method for producing hyperpolarized ^{129}Xe. A high level of polarization is obtained by this method. As stated in the description and illustrated in the Examples, the presence of the solvent or solvent mixture prior to hyperpolarisation dramatically increases polarization enhancement (comparison Examples 1 and 2 versus Examples 3-10). Claims 1 and 9 have been amended to a method including the use of preferred solvents, in line with the Examples.

As xenon is a rather lipophilic compound the applicant has found that it is favourable to use a lipophilic solvent to properly dissolve Xe in the solvent. Hence, it has been found that the properties of the solvent are critical for success of the polarization process. Further, it has been found favourable if the mixture of xenon and the solvent does not form crystals upon freezing when carrying out the DNP process. It is critical that xenon, which is to be hyperpolarized, is mixed with the solvent, or mixture of solvents, before hyperpolarisation as the purpose of the solvent is to avoid formation of crystals upon the hypopolarisation by DNP obtaining a high level of polarization. Further, it is critical that the solvent has the right properties to avoid such formation of crystals, i.e. that the solvent has good glass-forming properties and/or lipophilic properties. Hence, the applicant has found that both when the solvent(s) are included, and which type of solvent(s) are used, are critical to achieve such high levels of polarization.

Ardenkjær-Larsen (US 6,466,814) discloses a method of MR investigation including producing a hyperpolarized solution of a high T1 agent. A solid sample of the T1 agent is hyperpolarized and then dissolved in a physiologically tolerable solvent. Ardenkjær-Larsen does not disclose the use of a solvent or a mixture of solvents, wherein such solvent has good glass-forming properties and/or lipophilic properties, and does not suggest using a solvent or a mixture of solvents being a single chain alcohol or a glycol. Further, the applicant disagrees that it would be obvious to modify the order of the addition of the solvent in the process of Ardenkjær-Larsen, as the purpose and the function of using the solvent is different for the two inventions. Ardenkjær-Larsen uses the solvent simply to dissolve the hyperpolarized solid sample before administration to a body. However, in the present invention the solvent is

used as an additive in the DNP hyperpolarization of xenon and this dramatically increases polarization enhancement. Hence, there is no motivation by Ardenkjær-Larsen to modify the order of addition of solvent in the process of Ardenkjær-Larsen.

Pines, US6,426,058, provides methods for using hyperpolarized noble gases in conjunction with NMR spectroscopy and MRI. Several aspects are covered, mostly focusing on methods for analyzing samples. Pines does not suggest methods for producing hyperpolarized tracers wherein a high level of polarization is obtained. In one aspect (column 8, line 50) Pines suggests a method for analyzing a sample wherein a noble gas is combined with a fluid to form a mixture that can be delivered to blood or other tissue while the noble gas still has a large off-equilibrium nuclear spin polarization. A long list of fluids is suggested, focusing on fluorocarbons. Pines states that it is preferable to dissolve the hyperpolarized gas in a fluid that can prolong its relaxation time. Hence, the purpose of the fluid (solvent) of Pines is for administration purposes and for prolonging of the relaxation time. In the entire disclosure, Pines provides only a single sentence indicating that it can be advantageous to dissolve the noble gas in a liquid prior to hyperpolarizing the noble gas, furthermore there is no teaching as to why this should be done. Hence, in view of all of the other teachings and details in Pines, the skilled man reading Ardenkjær-Larsen seeking an improved method for hyperpolarizing xenon would not find any guidance for modifying Ardenkjær-Larsen so as to arrive at the invention as presently claimed.

Therefore, as neither Ardenkjær-Larsen nor Pines, considered together or individually, disclose, teach, or suggest the instant invention, Applicants respectfully submit

that the instant invention is patenably distinct thereover. Reconsideration and withdrawal of the rejection are respectfully requested.

In view of the amendments and remarks, hereinabove, Applicants respectfully submit that the instant application, including claims 1 and 3-9, is in condition for allowance. Favorable action thereon is respectfully requested.

Any questions with respect to the foregoing may be directed to Applicants undersigned counsel.

Respectfully submitted,

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